



SEQUENCE LISTING

<110> Adam, Gail Isabel Reid
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Denissenko, Mikhaili F.
Dennis, Edward
Cantor, Charles
Rubin, Byron

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DEPOSITION AND TREATING ASSOCIATED CONDITIONS

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gatttggcca ggtctgtctg gtggcagtg ccaagctttt aaccactaag tcacttcagc 11940
ccaattcctc tatgagtatt tatgactaca tttacattga aattcaccag aactaagcca 12000
gggacagtgg ctcacgcctg taatcccagg acttttgagaa gtctaggtgg gcagatcact 12060
tgaggccagg agtttgagac cagcctggcc aacatggcaa aaccctgtct ctactaaaaa 12120
atacaaaaat tagccgagta tgggtggcata ggctgtaat cccaactact cagg 12174

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<210> 2
 <211> 148
 <212> PRT
 <213> Homo sapiens

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<400> 2
Met Lys Leu Leu Val Leu Ala Val Leu Leu Thr Val Ala Ala Ala Asp
 1          5          10          15
Ser Gly Ile Ser Pro Arg Ala Val Trp Gln Phe Arg Lys Met Ile Lys
          20          25          30
Cys Val Ile Pro Gly Ser Asp Pro Phe Leu Glu Tyr Asn Asn Tyr Gly
          35          40          45
Cys Tyr Cys Gly Leu Gly Gly Ser Gly Thr Pro Val Asp Glu Leu Asp
          50          55          60
Lys Cys Cys Gln Thr His Asp Asn Cys Tyr Asp Gln Ala Lys Lys Leu
          65          70          75          80
Asp Ser Cys Lys Phe Leu Leu Asp Asn Pro Tyr Thr His Thr Tyr Ser
          85          90          95
Tyr Ser Cys Ser Gly Ser Ala Ile Thr Cys Ser Ser Lys Asn Lys Glu
          100          105          110
Cys Glu Ala Phe Ile Cys Asn Cys Asp Arg Asn Ala Ala Ile Cys Phe
          115          120          125
Ser Lys Ala Pro Tyr Asn Lys Ala His Lys Asn Leu Asp Thr Lys Lys
          130          135          140
Tyr Cys Gln Ser
145

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<210> 3
 <211> 562
 <212> DNA
 <213> Homo sapiens

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<400> 3
tgggtcatctc agttttctttt ctcaccttga ctgcaagatg aaactccttg tgctagctgt 60
gctgctcaca gtggccgcgcg, ccgacagcgg catcagccct cgggcccgtgt ggcagttccg 120
caaaatgatac aagtgcgtga tccccggggag tgaccccttc ttggaatata acaactacgg 180
ctgctactgt ggcttggggg gctcaggcac ccccggtgat gaactggaca agtgctgcca 240
gacacatgac aactgctatg accaggccaa gaagctggac agctgtaaat ttctgctgga 300
caaccggtac acccacacct attcatactc gtgctctggc tcggcaatca cctgtagcag 360
caaaaacaaa gagtgtgagg ccttcatttg caactgcgac cgcaacgctg ccatctgctt 420
ttcaaaagct ccatataaca aggcacacaa gaacctggac accaagaagt attgtcagag 480
ttgaatatca cctctcaaaa gcatcacctc tatctgcctc atctcacact gtactctcca 540
ataaagcacc ttgttgaaag aa 562

```

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<210> 4
<211> 552
<212> DNA
<213> Mouse

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<400> 4
ctccctcac tccttctgaa gatgaaactc cttctgctgg ctgctctgct cacagcaggc 60
gctgctgcac acagcatcag ccctcgggct gtgtggcagt tccgcaatat gatcaagtgc 120
accatccccg ggagtgatcc cctgaaggat tacaacaact atggctgcta ctgtggcttg 180
ggcggctggg gcaccccagt ggacgactta gacagggtgct gccagactca tgaccactgc 240
tacagtcagg ccaagaagct ggaaagctgt aaattcctca tagacaaccc ctacaccaac 300
acttactcct actcatgctc cgggagcgag atcacctgca gcgccaaaaa caacaaatgc 360
gaggacttca tctgcaactg tgaccgtgag gccgccatct gcttctccaa ggtcccgtac 420
aacaaggaat acaaaaacct tgacaccggg aaattctgtt agcctgtcac ctcaacttct 480
gcccacgccc accccgcccc ccttgctgtc ttatttcacc ctgcgcctc taataaagta 540
cctgctgtca ga 552

```

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<210> 5
<211> 542
<212> DNA
<213> rat

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<400> 5
ccctcgccaa gatgaaactc cttctgctgg ctgctttgct cacagcaggc gttactgcac 60
acagcatcag cactcgggct gtgtggcagt tccgcaatat gatcaagtgc accatccccg 120
ggagtgatcc cctgagggag tacaacaact acggctgcta ctgtggcttg ggcggctcag 180
gcaccccagt ggacgactta gacagggtgct gccagactca tgaccactgc tacaatcagg 240
ccaagaagct ggaaagctgt aaattcctca tcgacaaccc ctacaccaac acgtactcat 300
acaagtgtc cgggaacgtg atcacctgca gcgacaaaaa caacgactgt gagagcttca 360
tctgcaactg tgaccggcag gccgccatct gtttctccaa ggtcccctac aacaaggaat 420
acaagacct tgacaccaag aaacactgtt aggtgtcac cccacttct gtctatgccg 480
tccccgtcc ccttgctgtc ttatttctgc accgcaccct ctaataaagt accagcagaa 540
ag 542

```

```

<210> 6
<211> 289
<212> DNA
<213> P. obesus

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<220>
<221> misc_feature
<222> 269
<223> n = A,T,C or G

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<400> 6
tgttccgcaa tatgatcaag tgcgccatcc ccggaagtaa gcccctgaag gagtacaaca 60
actacggctg ctactgcggc ctgggcggcg caggcacccc agtggacgaa ttagacaggt 120
gctgccagat ccatgacaat tgctacacta aggccaaagag gctgaaaagc tgtaaatccc 180
tcctggacaa cccctacacc cactcatact cgtacaagtg ctccgggaat gagatcatct 240
gtagtgacaa aaacaaggaa tgcgaggcnt tcactgtcaa ctgtgaccg 289

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<210> 7
 <211> 148
 <212> PRT
 <213> Homo sapiens

<400> 7
 Met Lys Leu Leu Val Leu Ala Val Leu Leu Thr Val Ala Ala Ala Asp
 1 5 10 15
 Ser Gly Ile Ser Pro Arg Ala Val Trp Gln Phe Arg Lys Met Ile Lys
 20 25 30
 Cys Val Ile Pro Gly Ser Asp Pro Phe Leu Glu Tyr Asn Asn Tyr Gly
 35 40 45
 Cys Tyr Cys Gly Leu Gly Gly Ser Gly Thr Pro Val Asp Glu Leu Asp
 50 55 60
 Lys Cys Cys Gln Thr His Asp Asn Cys Tyr Asp Gln Ala Lys Lys Leu
 65 70 75 80
 Asp Ser Cys Lys Phe Leu Leu Asp Asn Pro Tyr Thr His Thr Tyr Ser
 85 90 95
 Tyr Ser Cys Ser Gly Ser Ala Ile Thr Cys Ser Ser Lys Asn Lys Glu
 100 105 110
 Cys Glu Ala Phe Ile Cys Asn Cys Asp Arg Asn Ala Ala Ile Cys Phe
 115 120 125
 Ser Lys Ala Pro Tyr Asn Lys Ala His Lys Asn Leu Asp Thr Lys Lys
 130 135 140
 Tyr Cys Gln Ser
 145

<210> 8
 <211> 146
 <212> PRT
 <213> Mouse

<400> 8
 Met Lys Leu Leu Leu Leu Ala Ala Leu Leu Thr Ala Gly Ala Ala Ala
 1 5 10 15
 His Ser Ile Ser Pro Arg Ala Val Trp Gln Phe Arg Asn Met Ile Lys
 20 25 30
 Cys Thr Ile Pro Gly Ser Asp Pro Leu Lys Asp Tyr Asn Asn Tyr Gly
 35 40 45
 Cys Tyr Cys Gly Leu Gly Gly Trp Gly Thr Pro Val Asp Asp Leu Asp
 50 55 60
 Arg Cys Cys Gln Thr His Asp His Cys Tyr Ser Gln Ala Lys Lys Leu
 65 70 75 80
 Glu Ser Cys Lys Phe Leu Ile Asp Asn Pro Tyr Thr Asn Thr Tyr Ser
 85 90 95
 Tyr Ser Cys Ser Gly Ser Glu Ile Thr Cys Ser Ala Lys Asn Asn Lys
 100 105 110
 Cys Glu Asp Phe Ile Cys Asn Cys Asp Arg Glu Ala Ala Ile Cys Phe
 115 120 125
 Ser Lys Val Pro Tyr Asn Lys Glu Tyr Lys Asn Leu Asp Thr Gly Lys
 130 135 140
 Phe Cys
 145

<210> 9
 <211> 146
 <212> PRT
 <213> rat

<400> 9
 Met Lys Leu Leu Leu Leu Ala Ala Leu Leu Thr Ala Gly Val Thr Ala
 1 5 10 15

His Ser Ile Ser Thr Arg Ala Val Trp Gln Phe Arg Asn Met Ile Lys
 20 25 30
 Cys Thr Ile Pro Gly Ser Asp Pro Leu Arg Glu Tyr Asn Asn Tyr Gly
 35 40 45
 Cys Tyr Cys Gly Leu Gly Gly Ser Gly Thr Pro Val Asp Asp Leu Asp
 50 55 60
 Arg Cys Cys Gln Thr His Asp His Cys Tyr Asn Gln Ala Lys Lys Leu
 65 70 75 80
 Glu Ser Cys Lys Phe Leu Ile Asp Asn Pro Tyr Thr Asn Thr Tyr Ser
 85 90 95
 Tyr Lys Cys Ser Gly Asn Val Ile Thr Cys Ser Asp Lys Asn Asn Asp
 100 105 110
 Cys Glu Ser Phe Ile Cys Asn Cys Asp Arg Gln Ala Ala Ile Cys Phe
 115 120 125
 Ser Lys Val Pro Tyr Asn Lys Glu Tyr Lys Asp Leu Asp Thr Lys Lys
 130 135 140
 His Cys
 145

<210> 10
 <211> 146
 <212> PRT
 <213> P. obesus

<400> 10
 Met Lys Leu Leu Leu Leu Ala Ala Leu Leu Thr Ala Gly Val Gly Ala
 1 5 10 15
 His Ser Ile Ser Thr Arg Ala Val Trp Gln Phe Gly Asn Met Ile Lys
 20 25 30
 Cys Ala Ile Pro Gly Ser Lys Pro Leu Lys Glu Tyr Asn Asn Tyr Gly
 35 40 45
 Cys Tyr Cys Gly Leu Gly Gly Ala Gly Thr Pro Val Asp Glu Leu Asp
 50 55 60
 Arg Cys Cys Gln Ile His Asp Asn Cys Tyr Thr Lys Ala Lys Arg Leu
 65 70 75 80
 Lys Ser Cys Lys Ser Leu Leu Asp Asn Pro Tyr Thr His Ser Tyr Ser
 85 90 95
 Tyr Lys Cys Ser Gly Asn Glu Ile Ile Cys Ser Asp Lys Asn Lys Glu
 100 105 110
 Cys Glu Ala Phe Ile Cys Asn Cys Asp Arg Ala Ala Ala Ile Cys Phe
 115 120 125
 Ser Lys Ala Pro Tyr Asn Lys Glu Asp Lys Asn Leu Asn Thr Lys Lys
 130 135 140
 Asn Cys
 145

<210> 11
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 11
 tgcagaggct caatcactgt

20

<210> 12
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

 <400> 12
 caggtgtggt ggtggattg 19

 <210> 13
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 13
 cacaggccac agcaaacag 19

 <210> 14
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 14
 tcagacttgc aggttgaaaa ag 22

 <210> 15
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 15
 ggcagaccga tttgaactct 20

 <210> 16
 <211> 17
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 16
 cgggatcacg cacttga 17

 <210> 17
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 17
 ggcagttccg caaaatgat 19

 <210> 18
 <211> 20
 <212> DNA

<213> Artificial Sequence
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 <223> primer
 <400> 18
 tgcaggcgga tcacttactt 20
 <210> 19
 <211> 19
 <212> DNA
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 <223> primer
 <400> 19
 agctgtccct cccactttc 19
 <210> 20
 <211> 19
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer
 <400> 20
 gtgtgggtgt acgggttgt 19
 <210> 21
 <211> 19
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer
 <400> 21
 agctgtccct cccactttc 19
 <210> 22
 <211> 22
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer
 <400> 22
 ataggtcaag gaaggataa ac 22
 <210> 23
 <211> 19
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> primer
 <400> 23
 agctgtccct cccactttc 19
 <210> 24

<211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 24
 ataggtcaag gaagggataa ac 22

 <210> 25
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 25
 caagaagctg gacagctgta 20

 <210> 26
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 26
 ataggtcaag gaagggataa ac 22

 <210> 27
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 27
 atcacctcaa cctccgttca 20

 <210> 28
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 28
 ggtggtgcac gcttgtaatt 20

 <210> 29
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 29
 aaggtaaagca gagatacgta aattat 26

<210> 30
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 30
 gggtatcttt gggtagtagg attata 26

 <210> 31
 <211> 16
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 <220>
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 <400> 31
 tgagatggga ggatct 16

 <210> 32
 <211> 14
 <212> DNA
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 <220>
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 <400> 32
 actgggaacc tcga 14

 <210> 33
 <211> 13
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> extension oligonucleotide

 <400> 33
 gctgatgccg ctg 13

 <210> 34
 <211> 13
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> extension oligonucleotide

 <400> 34
 ggagtgaccc ctt 13

 <210> 35
 <211> 17
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> extension oligonucleotide

<400> 35 acacatgaca actgcta	17
<210> 36 <211> 15 <212> DNA <213> Artificial Sequence	
<220> <223> extension oligonucleotide	
<400> 36 ggtgtgggtg tacgg	15
<210> 37 <211> 15 <212> DNA <213> Artificial Sequence	
<220> <223> extension oligonucleotide	
<400> 37 ggtgtgggtg tacgg	15
<210> 38 <211> 18 <212> DNA <213> Artificial Sequence	
<220> <223> extension oligonucleotide	
<400> 38 ccacacctat tcatactc	18
<210> 39 <211> 16 <212> DNA <213> Artificial Sequence	
<220> <223> extension oligonucleotide	
<400> 39 cttaggcagg agaatc	16
<210> 40 <211> 17 <212> DNA <213> Artificial Sequence	
<220> <223> extension oligonucleotide	
<400> 40 gtaatgcaac ttcaaac	17
<210> 41 <211> 20 <212> DNA <213> Artificial Sequence	
<220>	

<223> primer

<400> 41
accacttag catccttcag 20

<210> 42
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 42
tcttatgtgg gttccttggg 20

<210> 43
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 43
tgtggccatt gtgactgaga 20

<210> 44
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 44
gcccgggtga cagagtg 17

<210> 45
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 45
tgtggcagtt ccgcaaaatg 20

<210> 46
<211> 20
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<213> Artificial Sequence

<220>
<223> extension oligonucleotide

<400> 46
agtagcagcc gtagttgttg 20

<210> 47
<211> 20
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<220>
 <223> primer

 <400> 47
 accccgttag agatggaaac 20

 <210> 48
 <211> 20
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 <220>
 <223> primer

 <400> 48
 ctggtgctac attctgccac 20

 <210> 49
 <211> 20
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 <220>
 <223> primer

 <400> 49
 aatttctgct ggacaacccg 20

 <210> 50
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 50
 cctactgcta caggtgattg 20

 <210> 51
 <211> 20
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 <220>
 <223> primer

 <400> 51
 caagccaaaa gtaatgcaac 20

 <210> 52
 <211> 20
 <212> DNA
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 <220>
 <223> primer

 <400> 52
 ggattataga tgccttccac 20

 <210> 53
 <211> 20

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 53
 tcattctcaca ctgtactctc 20

 <210> 54
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 54
 caatatccaa acatgaggtc 20

 <210> 55
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 55
 gacagagaga gacactatct 20

 <210> 56
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 56
 gaaatgcaag ctggtattgg 20

 <210> 57
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> ddNTPs

 <400> 57
 ttagcatcct tcaggcctaa a 21

 <210> 58
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> ddNTPs

 <400> 58
 gactctgcct caaaataaat aaaa 24

<210> 59
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> ddNTPs

<400> 59
gccgtagttg ttgtattcca a

21

<210> 60
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> ddNTPs

<400> 60
gtgcaaaaca gtgggcatg ct

22

<210> 61
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> ddNTPs

<400> 61
tgattgccga gccagagca

19

<210> 62
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> ddNTPs

<400> 62
tgattgccga gccagagca

19

<210> 63
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> ddNTPs

<400> 63
cactgtactc tccaataaag cacc

24

<210> 64
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> ddNTPs

<400> 64

caaacaaaca cacacacaaa ac	22
<210> 65	
<211> 32	
<212> DNA	
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<223> primer	
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acgttgatg gggttgtcca gcagaaattt ac	32
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<211> 28	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> primer	
<400> 66	
acgttgatg ctttcaggt gctgccag	28
<210> 67	
<211> 19	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> primer	
<400> 67	
agacacatga caactgcta	19
<210> 68	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> primer	
<400> 68	
gctgtgtggc agttccgcaa	20
<210> 69	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> primer	
<400> 69	
gttccgcaat atgatcaagt gc	22
<210> 70	
<211> 23	
<212> DNA	
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<220>	
<223> primer	

<400> 70 gatgaaactc cttctgctgg ctg	23
<210> 71 <211> 22 <212> DNA <213> Artificial Sequence	
<220> <223> primer	
<221> misc_feature <222> 1 <223> s = C or G	
<400> 71 saagatgaaa ctccttctgc tg	22
<210> 72 <211> 20 <212> DNA <213> Artificial Sequence	
<220> <223> primer	
<400> 72 ggtgaaataa gacagcaagg	20
<210> 73 <211> 20 <212> DNA <213> Artificial Sequence	
<220> <223> primer	
<221> misc_feature <222> 7 <223> n = A,T,C or G	
<400> 73 ggagaancag atggcggcct	20
<210> 74 <211> 21 <212> DNA <213> Artificial Sequence	
<220> <223> primer	
<400> 74 cggtcacagt tgcagatgaa g	21
<210> 75 <211> 23 <212> DNA <213> Artificial Sequence	
<220> <223> primer	

<400> 75
ggaagtgggg tgacagccta aca

23

<210> 76
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<221> misc_feature
<222> 18
<223> n = A,T,C or G

<221> misc_feature
<222> 17
<223> w = A or T

<221> misc_feature
<222> 9
<223> s = C or G

<400> 76
ggtgacagsc taacagwnntt tc

22

<210> 77
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 77
gcacccagtg ggacgaatt

19

<210> 78
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 78
tcagcctctt ggccttagtg tag

23